cells as a substitute for skin grafting, while the growth of specific secreting cells in large quantities is still conditioned by the difficulty of providing suitable media and the removal of the metabolites. Yet there is nothing in the problem more difficult than many that have been overcome, and the possibility of ultimately producing the internal secretions in quantity and of superior purity is not unreasonable. Furthermore, the ability to regulate and exactly determine the physical and chemical environment of such cells foreshadows a development of cellular chemistry that would solve many of our most serious problems. H. D'A. P.

AURICULAR FIBRILLATION.

It has been frequently true that great advances in medicine have, in a manner of speaking, sidled into the world creating no great contemporary stir. Subsequent generations, however, point to them as landmarks and often note with pity the times in which they were born and which failed to recognize the gems in their own midst.

This may not be so true of our own age, for surely we have been generous in recognizing the colossal achievements of some of our contemporaries. Ehrlich, Flexner and Koch have reaped fulsome reward of genius and Sir A. E. Wright, Ronald Ross, Harvey Cushing, Wm. Osler, the Mayos and other intellects of the day cannot complain of a world cold to their attainments. Even have we been too prone to acceptance of new ideas and oft have we, especially in this State of California, turned to strange gods and false medicine men with bacterial soups and noxious emulsions of malignant growths.

In the midst of all this has crept into our literature with a modesty characteristic of the investigators, the epoch-making discovery of auricular fibrillation. Workers along cardio-vascular lines have overloaded the journals and transactions with voluminous reports,—some well founded, some full of imagination. The pathological physiology of the heart has been examined, mauled, twisted and handled by myriads of investigators. It has been at the mercy of many a fantastic laboratory man and clinician, but here and there from out the turmoil flashed a light which was to culminate in a brilliant beacon. His and Kent laid the way with the torch of the auriculo-ventricular bundle. James Mackenzie guarded the path with the signposts his application of the graphic methods of pulses afforded. Einthoven transported us further when he gave the electro-cardiogram, and then, as is usually the case, one man collected all that had gone before and brought forth a new truth. Using all these stepping-stones in a series of epoch-making and indubitably proved experiments, Thomas Lewis, working in the University College, London, laid bare the phenomenon of auricular fibrillation.

His work is to be found detailed in "Heart," for 1910, and repays many-fold the assiduous reading it entails. He began by enquiring further into the so-called nodal rhythm which was the term Mackenzie had given to the venous pulse in which all sign of auricular contraction was lacking. This pulse was to be found in nearly all of the cases of "broken compensation" and was accompanied by an arterial pulse to which the Germans gave the excellently descriptive title of pulsus irregularis perpetuus. All signs of auricular contraction being absent in the venous pulse, Mackenzie argued that the auricular wave must occur simultaneously with the ventricular wave and that the latter covered up the former. For auricle and ventricle to be contracting simultaneously the rhythm of the heart must be altered and the impulse instead of beginning at the sinus must be pathological and originate in these cases at the auriculo-ventricular node. Therefore the term nodal rhythm. This was a matter however, of speculation and the conclusion was reached by negative arguing. It was a source of grief to Mackenzie and to those who worked along similar lines that positive proof of this theory had never been attained.

The electro-cardiogram becoming available, Lewis turned his attention to the experimental and laboratory side. Working with animals he found that it was easy by stimulating the auricles with electrodes sewn into those chambers, and by regulating the strength of current, to reduce the auricles to a state of fibrillation lasting a longer or shorter time depending on various circumstances. Taking electro-cardiograms of these animals with their auricles fibrillating, a certain photograph was obtained. This photograph clinically and electro-cardiographically corresponded exactly with that given by patients having the so-called pulsus irregularis perpetuus.

This illuminated at once the course of events in these cases which are by far the greatest number of heart cases with which a clinician has to deal. Impulses from single auricular beats are not coming to the ventricle but instead the auricle in these cases showers impulses on the auriculo-ventricular bundle by the thousand. This easily exhausts the conducting power of the bundle with the result that very few impulses get through and the ventricle assumes a rhythm influenced by whatever stimuli can get through the bundle from the auricle.

As a theory this would be most enticing but the proof and manner of proof was exquisite. The importance of this work can hardly be overestimated for it led to therapeutic investigations which resulted in further glory to our old standby digitalis. Cushny and Mackenzie took up the thread where Lewis left it off and soon showed that the efficiency of digitalis was not only in increasing the force of ventricular contractions but by reducing the conductivity of the bundle, thus lessening the number of auricular impulses that could get through. This explained beautifully why we get such striking results in cases of "broken compensation" with an extremely irregular pulse. Turnbull on Digitalis in the British American Journal, Cushny in the American Journal of Medical Sciences, and Mackenzie in his Oliver-Sharpey Lectures have written brilliantly on this subject and to them readers along these lines are urgently referred.

These advances would not have been possible had not the graphic method of the study of heart disease been used, and after all it is to Mackenzie, who, personally interested himself in Lewis' work as well as providing a stimulus to it that the lion's share of our

thanks are due. Our profession still contains those who scoff at polygrams and electrocardiograms as fancy adjuncts to medicine but they have served their purpose well and the scoffers are among those who know least about the pathological physiology of the heart. Those who have interested themselves in this work appreciate the great step that has been made and those who would be anxious to get a more intelligent conception and greater therapeutic efficiency in the handling of heart disease should follow assiduously the work along these lines that is now going on. H. I. W.

THE ETHER-RAUSCH ALONE.

Although the easier and more rapid means of transportation and communication, and the constant stream of travel are making medicine more and more cosmopolitan, there seem still to exist some few appliances and methods peculiar to certain countries. The Kelly obstetrical pad, for instance, is distinctively American. We have never seen this admirable appliance used either in Great Britain or on the continent of Europe.

In the *Journal of the A. M. A.* for July 1st, W. T. Coughlin describes a form of ether anaesthesia which he happened to see in Leopold's clinic in Dresden, called the "Aetherrausch" and first described by Sudeck of Hamburg.

The "ether-rausch" may be known in Canada—Mackay says it is in a note on Coughlin's paper in a later number of the JOURNAL—but it does not seem to be known or used in this country;—and yet it is the anaesthesia *par excellence* for the clinic, for the office, for private practice, wherever, in fine, a short anaesthesia is needed and gas is not at hand. It is used a thousand times a day throughout Germany, and a death or an untoward accident under its use has never been reported. It takes but two or three minutes to induce, carries with it no post-operative vomiting or malaise, and its effects pass off in ten or fifteen minutes.

It has, however, its limitations: it is a short anaesthesia and incapable of prolongation; it gives complete analgesia but not complete muscular relaxation, so that it cannot be used for setting a fracture or for reducing a dislocation.

In principle the "ether-rausch" depends upon a quick momentary saturation of the blood with ether. The technique is as follows:

First. Remember the anaesthesia is a short one, prepare the patient *completely,* and get *everything* ready to your hand—instruments, sutures (needles ready threaded) disinfectants, drains, dressings, splints,—if you have to stop to hunt for a dressing the patient will be awake before you know it.

Second. Saturate an old-fashioned, large ether mask with 50 to 75 c. c. of ether—a Juillard mask covered with 8 layers of gauze inside and with oiled silk outside is the best, but an ordinary ether mask above which are placed two towels folded so as to make 8 layers will do. Tell the patient to hold one arm up in the air, and to breathe deeply, with forced inspirations. After he has taken five or six deep breaths advance the mask, holding it two or three inches above the face at first. The face soon begins to flush, the respiration to deepen;—now apply the mask closely, so as to let the patient breathe the concentrated ether vapor;—two or three more breaths and the arm which the patient was holding elevated will drop. This is the signal to begin; the anaesthesia is now complete, operate and carry your work *through* quickly, dressings and all, without a stop. Don't begin before the anaesthesia is complete. If the course of giving the anaesthetic is interrupted by pain the patient will begin to struggle and a further continuance of the narcosis will be impossible.

The mask should be removed from the face a minute after the patient is well "under"—after the painful part of the operation, the incision or the packing, is over. The room should be absolutely quiet throughout the whole procedure. The patient will then lie in a doze or stupor for four or five minutes after the mask is removed. When he awakes he presents the typical appearance of a drunken man—sits up with a flushed face and stupid leer, and laughs hilariously, or weeps—or does both at once.

Sudeck's "ether-rausch" has been a boon to many a German practitioner; it deserves that we should know it and practice it.

SOME DONT'S IN VACCINE THERAPY.

From time to time one hears the "vaccine" treatment of certain skin diseases adversely criticized by physicians who have been disappointed with their results. During the past six years the writer frequently has seen patients who previously had been given vaccines by their physicians in an empirical manner, with the inevitable bad result and the consequent discrediting of the method. It is to those who have been disappointed with their results that the following "don'ts" are respectfully dedicated in the hope that their due observance may be the means of preventing some future failures. The writer bases the following on considerable personal experience and success with the method and reports from other practitioners.

Do not expect to see good results unless vaccines are used in accordance with certain established rules,—only disappointment can result from empiricism.

Do not use vaccines to the exclusion of all other methods.

Do not use an emulsion over three months old.

Do not use a monovalent stock vaccine if a polyvalent preparation can be obtained and do not use either if an autogenous vaccine is available.

Do not overwhelm the patient at first with too large doses, and do not increase the dosage too rapidly.

Do not inject too often—this is a common error which is responsible for many disappointments.

Do not inject vaccines in the treatment of the average case of acne, furunculosis or staphyloccia more often than once in seven or ten days. Be guided by the clinical signs.